PART

One

Introduction to the ETF Marketplace

The process of dividing the current exchange-traded funds (ETFs) into categories of assets is not simple. Often ETFs fit reasonably well in multiple categories. If you were to separate all the characteristics that could possibly be categorized, you would have almost as many categories as funds and would not have made an unwieldy group easier to manage. For instance, an ETF that provides country access to a single non-U.S. country but does not use the atypical market capitalization weighting structure might be placed into either the international category or the fundamentally weighted category depending on the particular bias of the writer.

I tried to use an agnostic method of categorizing the available types of asset categories currently covered by the U.S.-listed ETF market, shown in Exhibit I.1. I tried to find the group of categories that present a clear overarching view of what types of products are available in the ETF wrapper without becoming too granular into the various different strategies. There is no firm standard because of the diversity of available products. I have seen various renditions of this type of chart with both more and fewer categories delineated. Exhibit I.1 shows the categories and their current respective assets and number of funds.

In terms of current assets, the equity funds as a unit far outweigh any of the other categories. Overall, equity-based products make up approximately 70% of ETF assets in the United States. This makes sense if you consider that the equity products came to market much earlier than the other categories, and the products are designed and listed within the realm of equity securities.

EXHIBIT I.1 ETF Categories and Assets (as of 1/14/10)

Category	Assets Under Management	# of Funds	% of Assets
Asset Allocation Strategies	$ 591,383,255	30	0.1
Commodity	$ 69,209,918,140	29	8.7
Currency	$ 6,783,055,150	20	0.8
Domestic Equity	$ 287,183,458,553	168	36.0
Domestic Sector	$ 67,786,010,878	138	8.5
Fixed Income	$ 109,486,445,610	92	13.7
Global/International Equity	$ 198,369,097,044	139	24.8
Global/International Sector	$ 18,210,216,508	74	2.3
Leveraged/Inverse	$ 29,010,808,888	129	3.6
REITs	$ 12,092,811,140	23	1.5
Totals	$ 798,723,205,166	842	

Source: Bloomberg.

As the acceptance of the ETF wrapper has grown, there has been growth in the other asset classes, such as fixed income, commodities, currency, and leveraged groups. By notional value traded, the fixed income and currency markets are much bigger than the global equities markets. Therefore, it would not be surprising to see relative growth in those product lines as their use continues to evolve.

Exhibit I.2 shows the breakdown of assets by category.

The discussion of trading and valuing ETFs must begin with a look into the genesis of the products. I aim to make this very brief since other books offer encyclopedic information regarding the specifics of product structure and initial product development. This text focuses on understanding how the products work, how to value them, good trading practices, who are the market participants, and how they are using the products. As Sun Tzu wrote in *The Art of War*, "It is said that if you know your enemies and know yourself, you will not be imperiled in a hundred battles." The financial markets are like a battleground: Success comes from anticipating the moves of others. This book will help you understand the motives of the other market participants in the ETF arena.

Part One focuses on how ETFs are brought to the market.

- **Chapter** 1 maps out the process of building an ETF, including: developing the underlying basket of assets, screening those underlying constituents for proper liquidity to make a viable product, and

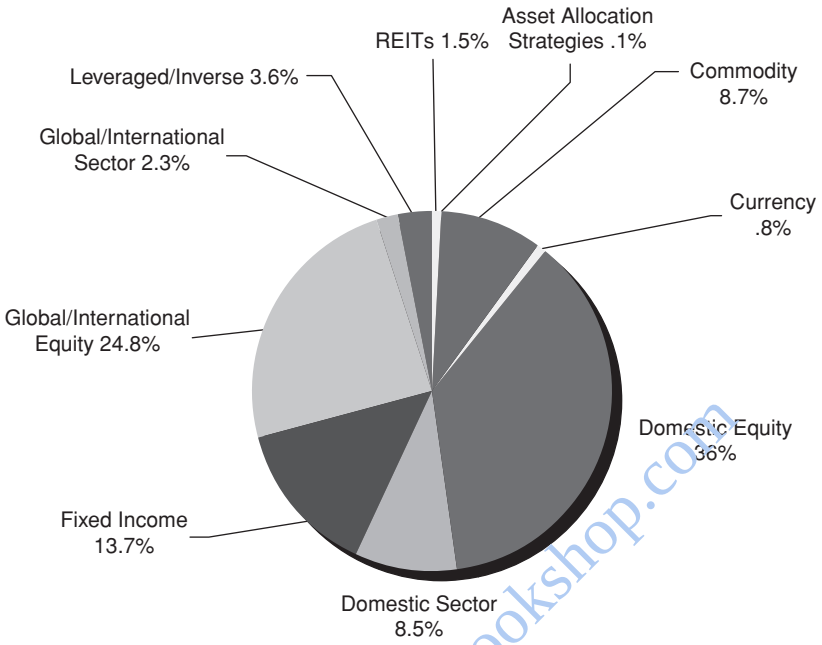

EXHIBIT 1.2 ETF Categories by Percentage of Assets (as of 1/14/10)
Source: Bloomberg.

developing relationships with partners who will provide liquidity in the listed ETF.

- **Chapter** 2 investigates the legal requirements for listing funds, the various structures that are available, and why they are utilized. I also highlight where some structures have had difficulties.
- **Chapter** 3 discusses the intricacies of bringing products to market. It is interesting to note that the ETF providers abide by the theory of "If you build it, they will come."[1] They bear the initial expense of building products and bringing them to market without any commitment that assets will be attracted to those funds.
- **Chapter** 4 compares three types of funds in the market: ETFs, closed-end funds (CEFs), and mutual funds. These products make up the cornerstone of investing for a large swath of the investing population. It is critical to understand the nuances among the product types to utilize any of them in an efficient manner.

Part One concludes with a look at some of the expectations I have for the ETF marketplace over the next decade. Much of the future growth of

the industry will be based around a solid understanding of effective product development. That is not simply the wrapping up of assets and calling them ETFs but understanding the best methods of making products that truly serve the needs of investors. Part One provides the foundation that is necessary for the trading and investing community to understand why products trade in certain ways and how they can be properly valued. Throughout the rest of the book, we build on these concepts to uncover the details of valuation and to learn more about the market. An entirely new trading and development mechanism is growing around the ETF structure. Any firm involved in the financial markets should now be working to assess the marketplace and gain an understanding of how to get involved in this rapidly expanding business.

CHAPTER 1

Development of an ETF

Launching an exchange-traded fund (ETF) involves numerous decisions for a fund company. One of the first things that will need to be decided is what type of market exposure will be offered by this new ETF. Once the underlying exposure is determined, decisions can be made that involve choosing the best methods to provide that exposure to clients. This is when fund companies determine which of the various structures will be used to bring the product to market. (This book focuses on the ETF structure as separate and distinct from other exchange-traded products in the marketplace, but Chapter 2 discusses the unique characteristics of these structures.)

Once the decision has been made as to what the underlying product set will be and in what structure the fund will be brought to market, there are the details of building the actual ETF. The formation of the creation unit, the basket of shares that comprises the funds underlying constituents, is probably one of the most critical decisions in ETF development. Ensuring that the basket underlying the ETF is transparent, liquid, and reasonably easy to trade has proven to be a consistent measure of product success in the marketplace. ETFs are listed products that trade during the day on an exchange. One of the main concepts that you will read about throughout this book is the mechanism that keeps the ETF trading near its underlying net asset value (NAV). The process of being able to create and redeem shares in an ETF on a daily basis, and thus the fungibility between the ETF and its underlying basket, is a critical and distinguishing feature of the product's design.

Throughout this chapter we tour the basic steps involved in bringing an ETF to the marketplace. We look at decisions regarding whether a product will be providing access or performance, whether it will become a passively or actively managed fund and what will be the universe of its underlying constituents. Then we get into the actual development of the ETF itself. I discuss the development of the basket for the creation unit, the creation and redemption process, and the Authorized Participant.

The creation and redemption process is discussed at the end of this first chapter. It is presented early in the book because, when speaking about trading ETFs and understanding their value, almost nothing is as critical as understanding what is going on in the creation basket and the relationship that basket has to the ETF price and its liquidity. The creation and redemption mechanism of the ETF product line is the differentiating factor that has been most responsible for its success.

MARKET ACCESS OR OUTPERFORMANCE?

The entire universe of ETFs can be boiled down to two essentially different product goals: those that provide access and those that offer some form of added performance metric. Although there are some black-and-white distinctions, there are also products that fit at different points along the product spectrum. In the product spectrum presented in Exhibit 1.1, you can see the pure products providing access or those providing active management and then the products in the middle utilizing enhanced indexing and other methods for achieving exposures.

An access product is a tool that provides passive exposure to the ETF user. The investor can attain exposure to a particular index, region, country, or sector by using an access product that typically tracks and tries to replicate a benchmark of some kind. The ETF market has made available a broad range of investment products that enable investors to access types of exposures only dreamed of previously. Never before was it practical to have an equity-based position in actual gold bullion in your investment account. Countries such as Vietnam, groups of global stocks representing specific sectors, and currencies from countries around the world are all available now within the ETF wrapper.

An ETF providing access to any form of defined exposure, such as tracking an index, is considered to be a beta-type product. A fund that is trying to outperform a specific benchmark would be considered an alpha-type product.

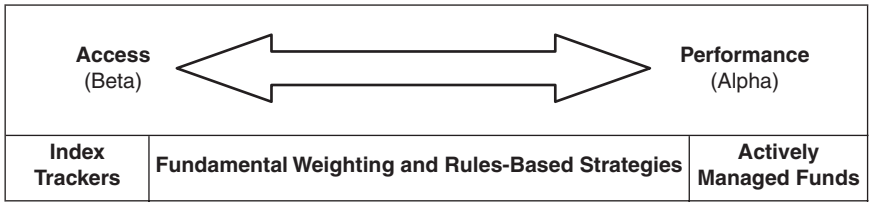

EXHIBIT 1.1 Product Spectrum: Index Tracking to Actively Managed ETFs

If an ETF is trying to provide something beyond pure tracking of a traditional benchmark index, it is considered to be a performance product. This type of product has become available only over the last few years. In the earlier days of ETF growth, the products were all designed as access vehicles competing against various other structures as tools for providing exposure. More recently ETFs have been moving across the spectrum attempting to outperform the traditional benchmarks, thereby offering a trading strategy within listed ETFs and providing new strategies for money managers to use in their portfolios.

Performance-type products are attempting to provide more than a basic index tracking tool. They are bringing to the market investment products that can be utilized to complete core or satellite portfolios and other strategies. Performance products that track new indexes are providing a form of passive alpha. They are not traded like actively managed funds but according to rules-based mechanisms. The funds track the newly created index rules, but within those rules are goals of outperformance, alpha. The new actively managed portfolios are attempting to provide an even purer level of alpha, not tracking an index at all, while attempting to generate returns that outperform specified benchmarks.

INDEX TRACKING OR ACTIVELY MANAGED?

When initiating the process of creating a new ETF, one of the primary considerations is to fully conceptualize what value you are trying to provide to the investing public. There are many different types of indexes, and they pursue many different methods of producing their desired results. Some take the entire available community of a specified group in order to produce a tracking mechanism. Others take a sampling of that same group and, by using weighting optimizations and other screens, they create a reasonable tracking mechanism within most constraints.

When creating an index on which to base an ETF, it is important to define the actual goal of the index. Is it being designed to provide a unique measurement of certain securities that have not historically been monitored in this way? Is the index being designed to track a benchmark or outperform it? The index could be created with the goal of improving on indexes that already exist. An example of this would be the creation of an index using fundamental screens in an attempt to outperform indexes based on market capitalization over time.

Typically the firm creating an index is separate from the firm that issues ETFs. There are a few firms that have both an index creation and an ETF issuance group within the same infrastructure. This is interesting because

a typical index provider has different concerns from an ETF issuer. Part of the determination in the construction of the index will inevitably be the ability to invest in the underlying products; however, it is not always the first concern of an index provider. The product development teams in the ETF world have been extremely creative in utilizing product structures to attain various exotic exposures. And in the places where they have determined that the exposure cannot be achieved via the typical route of index tracking, they have moved further toward actively managed vehicles.

According to a white paper entitled "Exchange-Traded Funds: A Passive Past and an Active Future": "Without argument, the most interesting event in the world of ETFs is the emergence of 'actively managed' product."[1] While this might be the slightly aggressive tone of an actively managed ETF provider, it sums up the feelings of many people, both inside and outside the ETF community, who eagerly anticipate the arrival of these new products in the marketplace. Actively managed ETFs free the products from their traditional tethers of replicating underlying indexes. In their simplest form, they enable ETF providers to produce products that aspire to outperform traditional benchmarks without the need for strict adherence to an index and its rules. Among the first products utilizing the active management exemption were currency ETFs designed to achieve their exposures via actively managed portfolios of nondeliverable forwards and other instruments.

Recently the market has begun to see the launch of products that are composed of baskets of securities actively managed by portfolio managers who previously would have not been able to run their portfolios within the ETF structure. These products are still in their infancy, and the directions that the active management exemption will take the ETF world are as yet still unknown.

UNDERLYING ASSETS

For an ETF to be effective and representative, it should consist of a group of securities that are, in all reasonable circumstances, adhering to the overall goal of the index or strategy and are diverse. There is usually going to be several constituent cuts when developing the ETF basket. If you are considering an ETF composed of large-capitalization stocks, for instance, the following steps might occur:

1. Cut the stocks with a defined minimal capitalization from the universe of all stocks to create the index.

2. Then cut the stocks with a minimal float or liquidity or any of a variety of variables. You might use any number of variables to screen and cut constituents.
3. Now you might have your index universe, and you proceed to create an index and then an ETF.
4. The ETF might be a perfect replication of the index or just an optimized cut, depending on underlying trading volumes and other potential constraints on creation basket constituents.

The decision to optimize your ETF basket, further reducing its constituents, or to provide perfect replication is not something taken lightly. There are various benefits and detractions to each methodology. Two of the largest ETF providers compete in many categories with similar funds that can be differentiated only on a basis of basket optimization versus perfect replication. These decisions can lead to significant performance differences over time.

Notional value of the assets underlying both an index and its tracking ETF is a very important consideration. If the universe is too small, it might not draw a broad enough investor audience or have enough underlying liquidity to bring the product success. There have been several examples throughout the short history of ETFs where products have been listed and failed to attract enough assets to continue growth. One reason for some of those failures might have been an extremely narrow goal that led to a highly specialized and small investment universe. This can lead to two distinct problems: a limited number of investors will have the desire or need to utilize the fund, and liquidity is unattainable because trading the underlying constituents of the funds can be very difficult.

Throughout this book I discuss the activity of accessing liquidity of ETFs via their underlying baskets. The notional assets of the underlying universe are an important factor that is closely related to actual ETF trading volumes.

REBALANCING AND INDEX CHANGES

Another important consideration that comes into play during the development stages of both the indexes and the ETFs is the frequency of corporate activity in the universe of constituents. Frequent changes to the baskets result in high trading costs and sometimes an inaccurate representation of the goal of the index. Various analyses will be done on the chosen constituents to determine the frequency of corporate actions, price volatility, weighting movements, and dividend yields to create guidelines for the management of the index. Tracking an index with a limited number of constituents whose

names change on a weekly basis can become challenging and cost prohibitive. Constituent weighting needs to have a reasonable distribution to be representative of the universe as well. If the basket skews too heavily to a few top stocks, then you will lose representation to the rest of the universe. This can lead to tracking issues and to a small number of names having an overly strong influence on the product.

A perfectly replicated basket will have the least tracking error as compared to the underlying index. Any existing error would result primarily from friction costs of executing the basket in a real life-example and management fees. Additionally, similar to the index, there will inevitably be some form of rebalance mechanism to account for underlying changes in the components for a variety of reasons. There are mergers and acquisitions, substantial changes to market capitalization, dividend size and frequency, as well as other changes to underlying equities that could create the need for some form of rebalancing of both the index and the ETF basket.

Some of the main considerations for creating the rules for rebalancing and tracking contradict each other. Although you may consider the underlying notional of an index for breadth, the fact that an index is not initially intended as a trading vehicle limits the concerns regarding the trading of its components. In creating the ETF basket, however, trading is an extremely important consideration. This is because in many ways the growth of the ETF itself is dependent on the ability of that basket to be traded and delivered to the issuer. Additionally, although you may desire perfect index replication to limit tracking (the spread between index and basket returns), at some point there must be a trade-off between the complexity and limited marginal added value of having too many names in the basket versus how much you are willing to diverge from tracking perfection.

ETF BASKET

The exchange-traded fund basket is really the central character in the entire production. It is called the creation unit, and it is used to facilitate the advanced features of the product wrapper. The creation unit is the basket that is published by the ETF issuer that is utilized for the in-kind, or cash, transfer of constituent shares and ETF shares. The ETF basket aims to satisfy the important characteristics of transparency, liquidity, and tracking, and these must all be considered within the constraints of basket development.

Whereas an index may utilize the entire available universe within its constraints, in order for an ETF to have a viable basket, it is important to examine further elements about the underlying components. Specifically, analysis should focus on the liquidity of those products and whether an

investor would be better off utilizing a smaller sampling of that universe in order to satisfy the trade-off between correlation and accessibility. In addition to liquidity, analysis should also focus on the individual weights of the index constituents. The ETF structure does not really benefit from weightings that are too large. And ETFs do not benefit from weightings that are too small because that can increase the trading costs without relative performance value. In the case where there are a large number of constituents at extremely small weights, to make the basket reasonable in terms of its ability to be traded using current methods of basket trading, it would be advantageous to reduce the number of constituents in the basket.

Creation Unit Determination

Let us look at some more particular points involved in the determination of the creation unit. Price point of the ETF is very important for product positioning. Typically it starts with a notional amount determination. At this point an analysis of the basket will be done at differing price points to assess the efficiency of trading the basket's constituents.

The average trading volumes of the underlying constituents of an ETF basket will be determinants in the potential future volumes of the ETF. At each step of determining the underlying universe and whittling it down to the ETF creation basket will be some form of analysis of its underlying constituents. If the ETF structure is not being used, there is potentially some greater leeway in the liquidity of the underlying baskets. Closed-end funds (CEFs) gained some of their popularity from their ability to invest in less liquid assets because they do not have a daily issuance component. The ETF wrapper allows for the daily issuance and redemption of shares; liquidity in the underlying basket is important to facilitate these transactions.

One of the main factors in determining the underlying basket will be the volume analysis of the components. This is also done during rebalances and at other times during the life of an ETF, not only during its initial development. I discuss the liquidity underlying an ETF via its basket in depth in Chapter 9, but let us take a look at some assessments of basket liquidity at this stage. Exhibit 1.2 shows several things that would be potential problems in an ETF creation unit basket.

The first thing to highlight would be ticker BBB, the second name in the basket, sorted alphabetically by ticker. This is an exceptional stock in the basket because its daily average trading volume is very small compared to the other constituents. Whereas the creation unit shares required for the other constituents are all less than 1% of their average daily trading volume (ADV), in order to trade the required shares for BBB, you would have to trade fully 20% of its daily average volume. This is an outlier that could

EXHIBIT 1.2 Potential Liquidity Constraints of the Underlying Basket

#	Ticker	Last Price	Average Daily Volume	Creation Unit Shares as Percent of ADV	Shares per Creation Unit	Percent Weight in Basket	Implied Potential ETF Shares at 50% ADV	Implied Potential ETF Units at 50% ADV
1	AAA	10	100,000	0.02%	21	0.07%	119,047,619	2,381
2	BBB	11	5,000	**20.00%**	**1,000**	**3.75%**	**125,000**	**3**
3	CCC	12	300,000	0.13%	386	1.58%	19,430,052	389
4	DDD	13	400,000	0.02%	80	0.35%	125,000,000	2,500
5	EEE	14	500,000	0.01%	49	0.23%	255,102,041	5,102
6	FFF	15	100,000	0.13%	131	0.67%	19,083,969	382
7	GGG	16	200,000	0.62%	1,242	6.78%	4,025,765	81
8	HHH	17	300,000	0.05%	139	0.81%	53,956,835	1,079
9	III	18	400,000	0.00%	13	0.08%	769,230,769	15,385
10	JJJ	19	500,000	0.17%	857	5.55%	14,585,764	292
11	KKK	20	100,000	0.11%	113	0.77%	22,123,894	442
12	LLL	21	200,000	0.59%	1,177	8.43%	4,248,088	85
13	MMM	22	300,000	0.29%	880	6.60%	8,522,727	170
14	NNN	23	400,000	0.22%	894	7.01%	11,185,682	224
15	OOO	24	500,000	0.01%	56	0.46%	223,214,286	4,464
16	PPP	25	100,000	2.80%	2,800	**23.87%**	892,857	18
17	QQQ	26	200,000	0.66%	1,311	11.62%	3,813,883	76
18	RRR	27	300,000	0.11%	331	3.05%	22,658,610	453
19	SSS	28	400,000	0.14%	571	5.45%	17,513,135	350
20	TTT	29	500,000	0.26%	1,300	12.86%	9,615,385	192
			Assets per CU		$ 293,239.00			
			Shares per CU		50,000			
			NAV		$ 5.86			

Source: Bloomberg.

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cause terrible potential liquidity issues for the ETF. If you look over to the right of the grid, you can see that the Implied Potential ETF Shares at 50% of ADV is only 125,000 shares. That number is a function of how many shares are required for a creation unit that can be delivered during the creation process. In the case of ticker BBB, because the required amount of shares is so high compared to its ADV, it becomes a serious constraint on the amount of ETF shares that potentially can be traded and created during a day.

In comparison, if you look at ticker III, you can see that the shares required for a creation unit are very small compared to the stock's ADV. The implied ETF column shows that if it were the only stock in the basket and just 13 shares of it had to be traded to complete a creation unit, and if you restricted yourself to only 50% of the average daily volume of the stock, you still could trade enough in a day to create 769 million shares of the ETF. It is important to notice that the number really is 15,385 creation units at 50,000 ETF shares per unit. Or to say it in another way, you could trade enough versions of the underlying basket to generate 15,385 creation units yielding 769 million ETF shares. At a current NAV value of $5.86, this implies that the ETF could potentially trade roughly $4.5 billion of ETF shares in a day (769 million × 5.86). However, because there are other stocks in the basket, ticker symbol BBB would restrict the daily trading notional in the ETF to approximately $733,000. This is a significant restriction to the trading of the underlying basket in this ETF; it shows how you typically calculate the potential liquidity of the ETF by its least liquid component. It would be better for the ETF if BBB had been screened out of the underlying basket.

Something else that stands out in this ETF basket is the weight of ticker PPP in the overall portfolio. Ticker PPP is showing a weight of 23.87% of the basket. This one stock comprises almost 24% of the basket, leaving it significantly overweighted compared to the other names in the basket. Typically an ETF has some form of regular rebalance that counteracts the effects of large weights due to price moves, which can potentially cause significant weighting imbalances in a fund. Some products on the market, however, do not rebalance their portfolios and end up with highly concentrated weights in a select number of names, which can become a constraint on the performance of the basket as a whole.

Beyond having an effect on the performance of the underlying ETF, weighting and liquidity determine the viability of the creation unit. This is the lifeline of an ETF that enables it to grow its assets under management (AUM). This makes the product viable and valuable for investors and profitable for the issuers. Those are the two mutually dependent goals of any good investment product.

Creation and Redemption Process

The creation and redemption process sometimes is misunderstood by the newer client base involved in the ETF product line. It is important to understand that the creation and redemption process is a function of the primary market and that this process facilitates the accessing of underlying liquidity in an ETF.

When ETFs are traded on an exchange, they are considered to be trading in the secondary market. The primary market is one of issuance. In an initial public offering (IPO), shares initially are issued in the primary market, and they begin trading in the secondary market. That is the case with an ETF as well, except that an ETF via the daily creation and redemption process has what is called continuous issuance. When an Authorized Participant (AP) does a creation, the requisite shares matching the creation unit are delivered to the issuer, along with the required cash component, and the issuer delivers the AP shares of the ETF. The issuer does not maintain an inventory of shares that it delivers to the AP, but as part of the creation process, the issuer "issues" new ETF shares. These new shares are reflected in the shares outstanding number of the ETF that is published daily. In an opposite situation, when the AP processes a redemption order, shares of

TRADING TIP

The in-kind transfer of stocks that is utilized in the creation and redemption process is the delivery of the stocks in the creation basket one way and the delivery of ETF shares in the opposite direction. Cash is not delivered to the ETF issuer except under certain circumstances. The in-kind process enables the fund to take in the stocks it needs for new investments without having to go into the market and purchase those shares. And the redemption process enables the fund to disburse the basket of stocks it no longer needs because there are fewer assets in the fund. This process is not considered to be a trade and has very important repercussions for management of the fund portfolio. One important feature is that it enables the portfolio manager to manage the cost basis of assets in the portfolio. Throughout the book we discuss various other benefits of this unique facility.

the ETF are delivered to the issuer, and the issuer delivers the underlying basket to the AP. Again these deliveries would also include the stipulated cash component amount. In this case, however, the issuer does not hold onto those shares or put them in some inventory; rather, those shares are theoretically "destroyed." This means that they are no longer outstanding in the marketplace, and the assets under management (AUM) of the ETF would decrease.

Exhibit 1.3 shows a very basic diagram of the creation process. In its simplest form, the AP is delivering a basket of shares to the issuer and the issuer is delivering shares of the ETF. These transactions are not considered official trades, and they do not report to the consolidated tape. They are in-kind transactions, an exchange of one for the other. The ETF issuer in this basic example is not trading any shares in the markets but is receiving them from the AP.

I have deliberately made this diagram extremely simple because I want market participants to understand the basic nature of the transaction first and then its ramifications later. This seemingly simple process enables the trading of millions of shares of ETFs at price levels right around NAV, and it is changing the underlying nature of the financial markets. It also enables ETF portfolio managers to manage their portfolios in a tax-efficient manner with which many other product wrappers cannot compete.

Exhibit 1.4 shows the process in reverse. In this case the ETF issuer is delivering the stocks in the underlying basket to the AP. This in-kind delivery of stocks from the ETF portfolio is the key to letting ETF portfolio managers manage gains and losses. It enables them to reduce any potential capital gains in the portfolio that might have occurred from rebalance trading or other corporate actions. Unlike reportable portfolio transactions these exchanges are not considered taxable events for the ETF.

The Authorized Participant Delivers a Basket of Stocks to the Issuer.
The Issuer Delivers the Shares of the ETF to the AP.
These Are In-Kind Transactions.

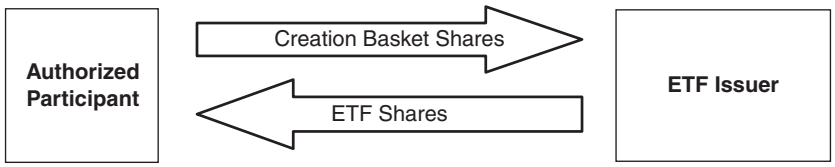

EXHIBIT 1.3 Simplified Creation Process

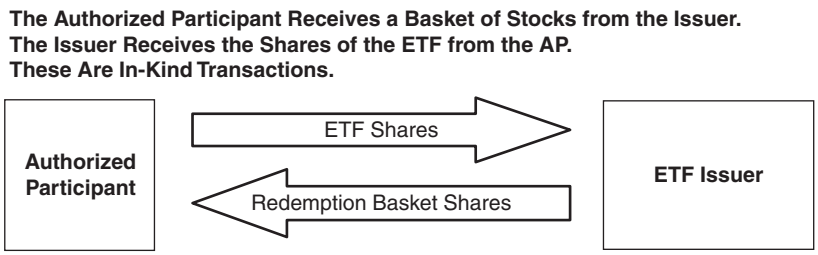

EXHIBIT 1.4 Simplified Redemption Process

Delivering and receiving in-kind shares is a process whereby the AP acts as the execution-and-trading agent of the underlying shares. It is the responsibility of the AP to either purchase the shares in the market or borrow those shares to deliver to the issuer. The in-kind shares exchange is the issuer either receiving or delivering shares in exchange for doing the reverse in the ETF shares. This is acceptable because the shares are fungible vehicles, interchangeable for each other. This process removes the expense of trading from the ETF when there is a growth or decrease in assets. It also enables the ETF to attain a high level of tax efficiency because it is able to divest its portfolio of shares without trading them in the marketplace and generating a taxable event. Because of this ability, capital gains distributions are typically very low or nonexistent in many ETFs. By contrast, a mutual fund that is facing the redemption of a large seller of assets will be required to go out and sell assets from the fund so that it can deliver cash to the redeemer. This can generate trading expenses to the fund and also generate taxable events in the form of gains from stocks that have been bought and must now be sold in the marketplace. In the ETF structure, most trading expenses due to asset growth and shrinkage are the responsibility of each individual investor and are not borne by all shareholders.

I have presented the pictures of the simple creations and redemptions because I am going to expand on the important specific features of the processes throughout this chapter and the rest of the book. Many of the graphical versions of this process bring in surrounding aspects that hide the effect of what is actually happening. At various points throughout the book, we will see additions to these basic charts to account for surrounding events, such as client involvement on one side and market trading on the other.

Almost every facet of the success of the ETF wrapper can be traced back to the process of the creation and redemption of shares. The two main competing products, closed-end funds and mutual funds, have very different methods of issuing and redeeming shares. The CEF issues shares via an IPO, and once it is listed, it is perpetual. Unless there is some form of activist

event or other event that causes the CEF to liquidate, its shares will remain listed on the exchange. A mutual fund never lists its shares on the exchange. It takes in cash directly from customers and issues shares directly to those customers. In the case of a redemption order, a mutual fund cancels shares outstanding and delivers cash to the customer. In both, the case of a CEF listing via an IPO and a mutual fund issuing new shares, the funds' portfolio managers put the cash that they have received to work in the markets via trading. ETF portfolio managers do not trade into their baskets of securities; they are delivered to them via their registered counterparts, the Authorized Participants.

Creations and redemptions take place at the official net asset value of the ETF. Since the NAV of the fund is calculated from the basket of stocks called the creation unit and a specified cash adjustment amount, both the basket and the ETF at that price are of equal value. If there were no charges for balance sheet usage and the positioning of stocks, one should be indifferent as to whether to hold the ETF shares or the creation unit of the ETF and its requisite cash piece. This essentially describes the arbitrage relationship between the separate and distinct pieces. The ETF trades as a security listed on the exchange at prices determined by the supply and demand of the marketplace. The basket of securities making up the creation unit also trades as listed securities independent of each other and independent of the ETF. However, an arbitrage relationship has been created by the creation and redemption mechanism that enables traders to tie the relationships of the various different prices together to an NAV value. This topic is looked at in further detail in the trading strategies discussion in Chapter 12.

Client-Driven Creation and Redemption Even if the creation or redemption is based on a client order, the AP is actually deciding to use the creation and redemption process. When I speak with clients who are seeking to move shares in large size into or out of an ETF, they are always asking if they can just do a creation or redemption. It would be beneficial if clients moved away from thinking that they are doing an actual creation or redemption to the view that someone will be facilitating their access or exit into or out of an ETF via the creation and redemption mechanism. There are several reasons for this:

- Clients should not feel constrained by the creation unit size.
- The creation and redemption process delineates basket pricing on the closing price, while an AP can access intraday liquidity for tailored executions. There are a multitude of execution methods around basket execution that do not require only on-the-close execution.

- The creation and redemption process is really a back-office end-of-day function utilized to transfer and flatten positions. It gives the AP, however, the ability to provide either liquidity or the underlying exchange of securities for ETFs to the customer throughout the day.

Let us talk about these points in further detail. The client base should not feel constrained by the creation unit size. Creation unit size is typically a minimum amount of shares that can be submitted by an AP for either a creation or a redemption order. The size minimum was created as a function of the regulation process that allowed ETF issuers to interact with an institutional client base. The process allows for the APs to aggregate smaller trades into a larger lot size and then process a creation to flatten their position. The ETF clients, and the advisor businesses that are handling their order flow, need to realize that if they contact either an AP desk or a portfolio trading desk (typically these two are either the same or related), the trading desk can go out and transact in the underlying ETF basket and give them an implied ETF price execution. If the creation unit size is 100,000 shares, the trading desk still can go out into the underlying market and trade a smaller basket on the behalf of the client. This is actually what is being done when the liquidity providers are making markets in the ETF. They are taking on the risk of providing an ETF price and will go out and hedge with the basket after the ETF trade has been completed. This process can also be utilized in a risk-free fashion, however, via an agency type of order from the client. This order effectively instructs the trading desk to transact in the underlying basket first, then calculate the implied ETF price from the basket executions and give the client an ETF report. If the size that is being facilitated is smaller than the creation unit size then it will lead to residual shares on the trading desk books. This will lead to a slightly higher facilitation fee to cover financing until the ETF desk can piece together an entire creation unit and collapse the position.

The next point to discuss revolves around pricing. Because an ETF releases a creation basket every day, then any time you trade that exact basket of stocks, you are trading the ETF at its relative NAV price. If you are benchmarked to the official NAV price for some reason and you want to be able to compare your price to the published NAV of the ETF, trading at the close is optimal. The official ETF NAV is based off the closing prices in the underlying stocks (see Chapter 5), and by trading at those closing prices your price should match the ETF NAV. However, if you trade the exact basket of the ETF one hour before the close, you are also trading at the implied NAV of the fund, however in this circumstance it is called the ETF's intraday indicative value. The creation and redemption process lets the liquidity providers pursue any arbitrage slippage between the basket and

the ETF price. Pursuing strategies utilizing the underlying basket as your trading vehicle can give you executions in your desired ETF without actually trading the ETF on the exchange, at prices that are at or very close to the intraday NAV. An example would be to instruct an AP to buy the underlying basket of a very illiquid U.S.-listed ETF with domestic underlying constituents at the volume weighted average price (VWAP) during the day. The AP would then work orders in all the underlying stocks in the basket and come to an overall VWAP price on the basket, which can then be interpolated into an ETF price. This is transacting in the ETF while not actually trading it, and is another way to pursue liquidity.

TRADING TIP

The volume weighted average price (VWAP) is a measure of the notional amount of a stock traded divided by the amount of shares traded over a specified time period. If you are trading at the VWAP price, you are trading where the majority of stock has traded during that same time period. The VWAP algorithm is used by money managers to ensure that they are buying and selling stocks at prices in line with the rest of the market.

At that point, the AP would have a position in which it sells the client the ETF shares and has bought the basket replicating that ETF. A creation order would then be submitted to flatten the trading book positions. Let us take a closer look at who this critical player is in facilitating the in-kind delivery of shares leading to the creation and redemption of the ETF.

Authorized Participant

The creation and redemption mechanism that enables the ETF to accept and disburse assets also functions as a necessary position management system for the facilitators of ETF secondary market trading: the Authorized Participants. The mechanism is essentially designed to enable share delivery back and forth between the issuer and the street, without the issuer actually having to execute baskets.

Becoming an AP requires an agreement with the ETF issuer and puts the AP in a position to consolidate baskets of stocks and deliver them in exchange for shares of the ETF. It also enables the AP to receive those baskets from the ETF and disburse them into the market when a redemption order occurs. It is probably one of the most crucial aspects of the entire process

because, without the APs consolidating basket trades into large blocks and then delivering them, assets would not grow and fees would not be earned. The ultimate goal relies on the partnership between the AP and the issuer and their delivery of baskets of stocks to that issuer. It is this process that enables an ETF to grow and increase in assets.

There is no initial fee to become an AP, and, in fact, it has become a very good business for participants. Almost every major investment bank and clearing firm has become an AP to facilitate the ETF creation and redemption process. There is a fee charged for creating and redeeming ETFs, but it is typically rated as a processing fee. This fee is typically a single flat fee irrespective of how many units are required in the transaction. This creates a great economy of scale benefit to a large client market-making business. Because it is unknown how many shares of an ETF an AP will trade in the future, the creation and redemption fees are built into the standard spreads in an ETF market. This creates the situation where APs can build the fee spread into every trade they do; upon consolidating order flow, they can, over time, reap that differential between one unit and multiple units. If the trade is an agency-type creation or redemption, the client will pay the fee. If a market is being made, the ETF spread will include the fee on a per-share basis. A by-product of making markets in ETFs will enable an AP to collect creation and redemption fees in market spreads, particularly in lower-volume ETFs. If the volume coming in the future is unknown, market makers include in their spread the cost of flattening their books via the creation and redemption process. If the ETF has a very high volume, there is a higher chance of unwinding any facilitation position in the market, and spreads can include a probability adjustment to the creation fee, enabling slightly tighter markets. This helps to partially explain why ETF spreads narrow as volume increases as products develop.

Trading Example of an AP Facilitating Order Flow An AP facilitating multiple clients could produce results in this manner: If a client enters an order to buy 100,000 shares of ETF-A, the AP acting as a liquidity provider could sell the client the ETF and buy the creation unit basket of shares to hedge the short ETF exposure. The creation unit size in ETF-A is 100,000 shares, and the fee is $2,000 to do a creation or redemption, regardless of the number of units. When the client order comes to the trading desk, the AP has no clear idea of what the future will bring in terms of additional orders, so embedded in the price that the AP offers the shares for ETF-A to the client would be the cost per share to process the creation, or 2 cents per share (2,000/100,000 = .02). Then, later that day, another client may come in to buy an additional 100,000 shares of ETF-A. At this point the AP still does not know if future client orders will go in the opposite direction and cancel out the position,

so the AP again embeds the creation costs in the asking price, or another 2 cents per share.

For this example, we are speaking about an ETF that has low intraday volume. The AP is hedging with the basket instead of unwinding the ETF position in the secondary market. At this point the AP has now collected $4,000 in creation fees embedded in the spread, but because it pays a flat fee to create units, it will have to pay $2,000 only. Let us add a seller to this concept. A new client comes in with 200,000 shares of ETF-A to sell. At this point the AP would calculate the price it is willing to pay, including a redemption fee of 1 cent per share (200,000/$2,000 = $.01). The client trades and sells the ETF-A shares, and the AP sells basket shares underlying 200,000 shares of the ETF. The AP has now completely flattened its positions in both the ETF and the basket component shares, leaving it with no balance sheet usage. Additionally, the AP has collected three sets of fees for creation and redemption orders that are not processed versus the issuer. This highlights the importance to issuers of working diligently to keep creation/redemption costs down to the lowest minimum charge they can negotiate with processing agents. These costs, which can be considered an implicit cost of trading ETFs, can have a direct impact on the costs of trading. Although the cost is present in every ETF, it is more relevant in ETFs with low intraday trading volume because typically there are not as many offsetting trades that work to enable market participants to narrow the spread. This point is discussed in further detail in Chapter 11 regarding execution.

CONCLUSION

This chapter has covered a lot of ground, much of which will be expanded on later in the book. We have started with the initial development procedures of the ETF because that is where the decisions are made regarding the ETF's underlying exposures. A solid foundation in the mechanics of ETF development is beneficial for the proper utilization of the products. The growth of the ETF and its facilitation by the Authorized Participants using the creation and redemption mechanism was presented because it is such a primary advantage of the ETF wrapper.

The exchange-traded fund is a very pure product and is the one that bestows a variety of benefits to the user. Chapter 2 takes a closer look at the various structures of exchange-traded products. The listed funds industry has expanded to include products that look similar to ETFs but have some important differentiating characteristics. It is important to understand those features when determining which product is right for each investment opportunity.